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SUMMARY

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THE USE OF RADIOISOTOPES AND SPECIAL INSTRUMENTATION FOR PROCESS CONTROL AND DEVELOPMENT IN THE MINERAL AND METAL INDUSTRIES

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ABSTRACT AND SUMMARY

1. The possible applications of electronic process controls and instrumentation are considered in their relation to development conditions for the metallurgical and mining industries in less-developed areas. In the three phases of resource development--exploration, process development and routine operations--different levels of technical competence are required as well as different degrees of individual responsibility on the part of the operating staff. The greatest field for semi-automatic process control lies in the area of routine plant operations, where it is superior to the alternative of breaking down operations into a large number of simple steps capable of being handled by low-level unskilled labour.

2. The use of radioactive markers and gauges is reviewed and it is seen that, when properly installed, such devices do not differ inherently from other types of process equipment in either complexity or maintenance requirements.

3. The use of radioactive tracers for process development and for the adjustment of operating conditions is valuable in many fields of technology and should be used to the fullest extent wherever experienced supervision is available. Tracer applications are not recommended on a continuous basis in production circuits, unless conditions of recovery of the tracer and total expected radiation levels are exceptional.

4. A brief review is given of recent developments in the use of electronic control equipment in the mineral industries.

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